VASEF
Virginia Aviation and Space Education Forum

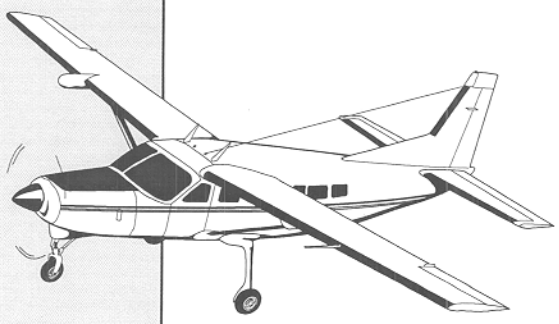
Aviation Education News

A Resource for Educators

Distributed Quarterly to Promote Aviation Education and Awareness in Virginia

November 1999

In this Issue:



FRIENDSHIP FLIGHT '99

On November 9, 1999, Minnesotans Buzz and Betty Kaplan and Jim and Maryalice Hanson will depart Owatonna, Minnesota for a six-week adventure that will take them through South America and to Antarctica. They will travel nearly 10,000 miles through the Caribbean, Central and South America with the much anticipated Antarctic landing scheduled for November 29th. The trip will be flown in a single-engine, turbroprop aircraft called a Cessna Caravan. For the benefit of those who would like to follow the trip, an interactive website is being sponsored by the Minnesota Department of Transportation (Mn/DOT) Office of Aeronautics and the Heritage Halls Museum. Go to the Mn/DOT Office of Aeronautics site (*www.dot.state.mn.us/aeronautics/mdot.html*) and click on the Friendship Flight button.

Pilot and team leader, R.W. "Buzz" Kaplan said, "We believe there are still a lot of adventures out there. This will be our fourth Friendship Flight. Each time, we've met wonderful people from all over the world and faced challenges inherent in long distance travel in foreign countries. We invite everyone to follow along as we post our journal entries on the Friendship Flight '99 Website." Buzz will download tales of his journey every Monday, Wednesday, and Friday. Photos from the trip will also be available for download giving visitors a first hand look at such sites as the Caribbean, the Amazon River, the Pampas of Argentina, the rugged coastline of the Cape, the Andes, and Lake Titicaca, which at 12,500 feet is the highest navigable body of water in the world.

The website will also have numerous activities that can be done in the classroom and at home as well as downloadable curriculum suggestions for teachers. It is hoped that over a million school children from Minnesota and throughout the nation will follow the flight. "We feel that this flight will provide a unique opportunity for students to see how the skills they are learning in school relate to the unlimited possibilities of their future," said Ray Rought, Director of the Mn/DOT Office of Aeronautics. "We're proud to partner with this unique project to enhance aviation awareness throughout Minnesota and the world."

Friendship Flight '99 Intinerary (Southbound):

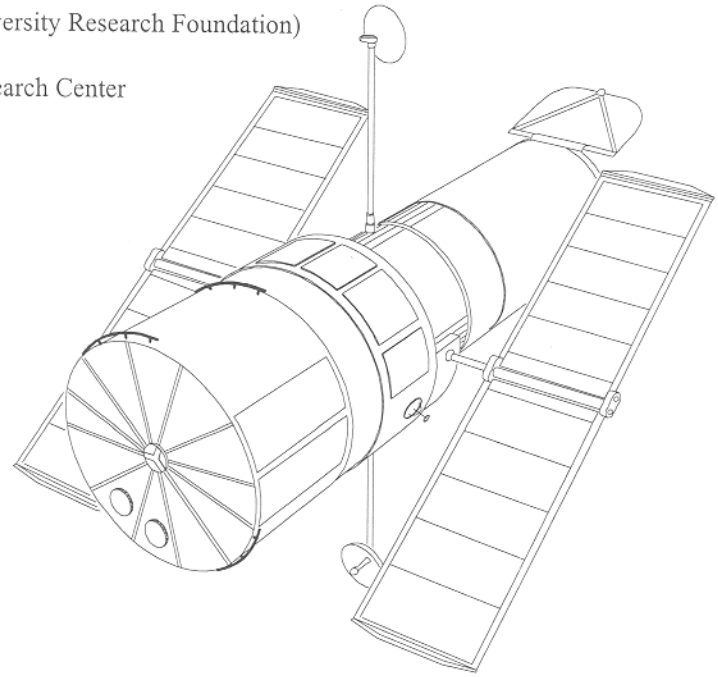
11/09/99 Depart Owatonna, MN
11/09/99 Bimini, Bahamas
11/10/99 Kingston, Jamaica
11/11/99 San Juan, Puerto Rico
11/12/99 Kingstown, Barbados
11/13/99 Paramaribo, Surinam
11/14-15/99 Santarein, Brazil
11/16/99 Aragnaine, Brazil
11/17-18/99 Brazilia, Brazil
11/19-20/99 Sao Paulo, Brazil
11/21/99 Ciudad del Esce, Paraguay
11/22-23/99 Buenos Aires, Argentina
11/24/99 Bahia Blanca, Argentina
11/25/99 Commodoro Rivadiva, Argentina
11/26/99 Rio Galegos, Tierra del Fuego
11/27-28/99 Ushuaia, Tierra del Fuego
11/29-30/99 Base Marambio, Antarctica

PRESIDENT'S NOTES:

The NASA Langley Research Center's Office of Education (OEd) is working in collaboration with the Virginia Department of Aviation which is an excellent way to maintain two-way communication between federal and state aviation education concerns.

NASA is anticipating providing two teacher workshops, a two-week NASA Education Workshop (NEW) for kindergarten through 6th grade (K-6) (6/18-7/1/00) & a two-week NEW rural initiative (7/6-21/00). Included as a first day of each program is an entire day at a Fixed Base Operation "Flight School". Last year the professionals at Sky World Flight Training Center at the Newport News - Williamsburg Airport were kind enough to provide a truly exceptional program for each. I am anticipating working with Roger A. Leonard from Cardinal Aviation for the up-coming year. I have included the principles of flight into these programs as a vehicle for the teachers to experience first-hand, the principles of aeronautics so they could strengthen the mathematics and science skills of their students by using flight as a "hook" to catch and hold the attention of their students. These programs are open to public and private school teachers in the elementary, middle and high school grades. An application is available on the web at http://www.nsta.org/programs/new.htm or email nenm-request@nsta.org or Fax on Demand 1-888-400-6782. The dates that applications will be due are tentatively mid February 2000. We are also conducting three additional two-week pre-service NEW workshops for teacher candidates from colleges and universities. There will be a total of 50 teachers and 75 teacher candidates that will be participating.

Peter D. Thomas
(Old Dominion University Research Foundation)
Office of Education
NASA Langley Research Center



VASEF AVIATION EDUCATION NEWS
is published quarterly in support of aviation education in the Commonweath of Virginia by the Virginia Department of Aviation

VASEF NEWS Editor: Betty Wilson

Please send story ideas, photographs, calendar events, and other items for possible inclusion to:

Betty Wilson
Virginia Department of Aviation
5702 Gulfstream Road
Richmond,Virginia 23250-2422
(804) 225-3783
(804) 236-3635 (FAX)
wilson@doav.state.va.us (E-mail)
http://www.doav.state.va.us (Internet)

VASEF PURPOSE

The Forum is a non-profit organization to promote and foster aviation and space education among public and private schools, colleges and universities, and community and civic groups, and to promote increased public understanding of aviation and space and their economic, social, and career values in our society and in the Commonwealth of Virginia.

The **Take Off!** Series

An Aviation and Aeronautic Science Kit for students in grades 6-12

(Sponsored research funding for the Take Off! Project was provided through a cooperative agreement award (NCC 2-915) from the National Aeronautics and Space Administration. High performance Computing and Communications Office, through its Learning Technologies Program.)

This kit, created in partnership with aviation educators, schools, and aviation professionals, is designed to inspire middle and high school students -- especially those interested in nontraditional classes - to study math and science through adventures in aviation and aeronautics. The cost of the kit is $100.00

The nature of aeronautics and aviation science is one of cooperation; a large number of people have worked together to make it happen. Scientific discoveries from many disciplines - chemistry, biology, earth science, physics, mathematics - and the technological innovations resulting from such discoveries, all have contributed to make air transportation safer and more affordable.

Integration between math, science, and engineering principles is the thematic approach behind the curricular units developed for Take Off!, making this kit the perfect tool for students to learn how science discoveries and technological applications interact to further human achievement and benefit society.

The Take Off! kit leads students on a discovery tour of the math, science, and technology behind aviation and will hopefully inspire them to think of themselves as potentially involved in a career that will contribute to this exciting field.

This kit contains:
The Take Off! Video Series
The Take Off! Teacher's Guide
The Take Off! Web Supplement

The Take Off! Video Series
Based on materials developed for two live, interactive satellite broadcasts, this video series teaches math and science principles (forces and vectors, speed and acceleration, gravity, conservation of energy and momentum and Newton's law of motion), through their application to the science of aviation and aeronautics. It is designed to inspire middle and high school students with the excitement of flight and the possibility of a career in the aviation field.

Targeted at the middle school level, the series is easily scaled up for high school students. The Teacher's Guide, developed to support teachers integrating this video series into their curriculum, offers many examples of how to adapt classroom activities to address curriculum requirements at various grade levels.

Five units compose the video series:
1. The Miracle of Flight
2. How Does an Airplane Fly?
3. Instruments & Systems
4. Navigation
5. Weather

The Take Off! Teacher's Guide
Developed to support teachers using the Take Off! video series in the classroom, the Take Off! Teachers Guide provides additional background content and an extensive selection of lesson plans with classroom activities based on the concepts covered in the video program. The Teacher's guide presents two different types of activities, *Thought Experiments* and *Exploring Further*. The first type is intended to develop critical thinking and communication skills; the second type describes hands-on experiences that will let the students touch, feel, and see the implications of the scientific principles presented. Keeping in mind the need for accessible materials and budget realities of school teachers, all the activities are designed to be performed with minimal need for support materials.

All the activities presented in the guide are aligned with the National Science Education Standards and the National Council of Teachers of Mathematics: Curriculum and Evaluation Standards for school Mathematics.

The Take Off! Web Supplement
For teachers and students with access to computers equipped with internet connectivity, the web supplement provides links to online resources covering aeronautical research and aviation topics. The supplement also contains detailed information on the Take Off! video series and a list of selected sites for each video, a brief interactive document dedicated to careers in aviation and a direct link to the Take Off! main web site, at http://www.mcet.edu/nasa. Two disks are provided: one for PC and one for Macintosh.

To order a kit @ $100.00 each, please process payment to The Massachusetts Corporation for Educational Telecommunications, and send the order to the attention of Dr. Phillip J. Sleeman.

For more information please call 617-252-5700, extension 759.

Thanks to Dr. Frank Mitchell of the University Aviation Association for sharing information about this aviation education resource with us.

16th Annual Rotary Aviation Career Day at Richmond International Airport

Aviation Career Day is sponsored annually by Sandston, Henrico East, New Kent, and Byrd International Airport Rotary Clubs in cooperation with the Richmond International Airport Aviation Community. This year's event was held on October 21, 1999.

Selected students from central Virginia counties were invited to listen to inspirational aviation professionals speak about their occupations, visit an exhibit area which included displays by aviation related businesses and government entities, universities and trade schools, and the military. Tours of airport facilities, including the control tower and airline operations areas, were also included.

There was an outdoor display of aircraft which students visited. The pilots of these aircraft were available to answer student questions.

National Air and Space Museum Calendar

Thursday, November 18, 1999
GE Lecture Series
"Vipers in the Storm: Diary of a Gulf War Flighter Pilot"
Captain Keith Rosenkranz, Top Gun in F-16 fighter training, and author of *Vipers in the Storm*, flew 30 combat missions for the 388th Tactical Fighter Wing during the Gulf War. Captain Rosenkranz will recount his journey to Iraq and his daring nighttime missions. Admission for this lecture is free and there are no tickets or reservations.

Wednesday, November 24, 1999
Curator's Choice
"The Hubble Space Telescope's Faint Object Spectrograph"
Wednesday, November 24, 12 p.m.

Saturday, November 27, 1999
Monthly Star Lecture
"Chandra Looks at the X-ray Universe"
Saturday, November 27
6 p.m., Albert Einstein Planetarium
The Shuttle carried the third of NASA's Great Observatories, Chandra, into space on July 23. Chandra is a sensitive X-ray telescope with spatial resolution 10 times better than any previous observatory and was built to study objects that are very hot or subject to violent processes. Fred Seward of the Smithsonian Astrophysical Observatory will show pictures of X-ray emission from the vicinity of stars, neutron stars, black holes, and galaxies. Already, things have been seen that have not been seen before and some of these will be presented and discussed. We will also view the attractions of December's night skies.

IMAX® Films
Cosmic Voyage
Mission to Mir
To Fly
Wolves
Thrill Ride: The Science of Fun

Albert Einstein Planetarium Shows

Feature Presentation:
"And a Star to Steer Her By"

"Sky Quest" (for families and children ages 4-8)

"The Stars Tonight" (journey through the stars, constellations and celestial highlights of the current night sky with a Museum staff member using the planetarium projector.

Paul E. Garber Preservation, Restoration, and Storage Facility
Get a behind-the-scenes look at the restoration workshop in Suitland, Maryland, where skilled craftsmen restore aircraft, satellites, and flight-related artifacts. Free tours last approximately three hours. 10:00 a.m., Monday through Friday; 10:00 a.m. and 1:00 p.m. Saturday and Sunday. For reservations, call (202) 357-1400 (voice) or (202) 357-1505 (TTY).

For general information call (202) 357-2700 (voice) or (202) 357-1729 (TTY).

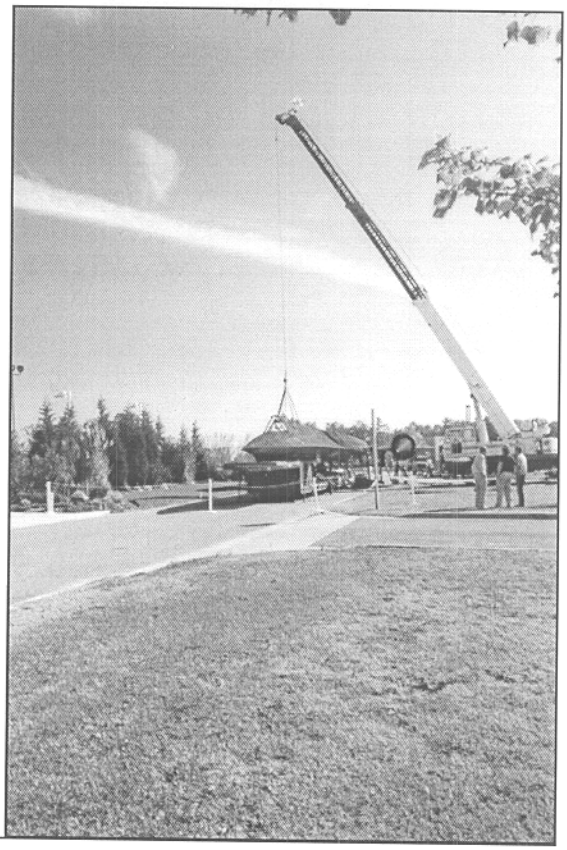
SR-71 Blackbird Arrives at the Virginia Aviation Museum

The Virginia Aviation Museum (VAM), a subsidiary of the Science Museum of Virginia, has received it's recently acquired SR-71. The aircraft was dismantled and trucked from Edwards Air Force Base in California to VAM.

Upon arrival, it was reassembled and placed in a temporary location on the front lawn of the Museum.

The Mach 3 reconnaisance aircraft was capable of flights to altitudes of over 85,000 feet. No known modern aircraft can match it's performance.

To learn more about the SR-71 Blackbird and it's cross-country trip to Virginia visit the Science Museum's web site: http://www.smv.org



Year 2000 International Aviation Art Contest Now Underway

Brochures for the Year 2000 International Aviation Art Contest are in the mail to each public school in the Commonwealth of Virginia. The deadline for receipt of artwork at the Virginia Department of Aviation office is February 4, 2000.

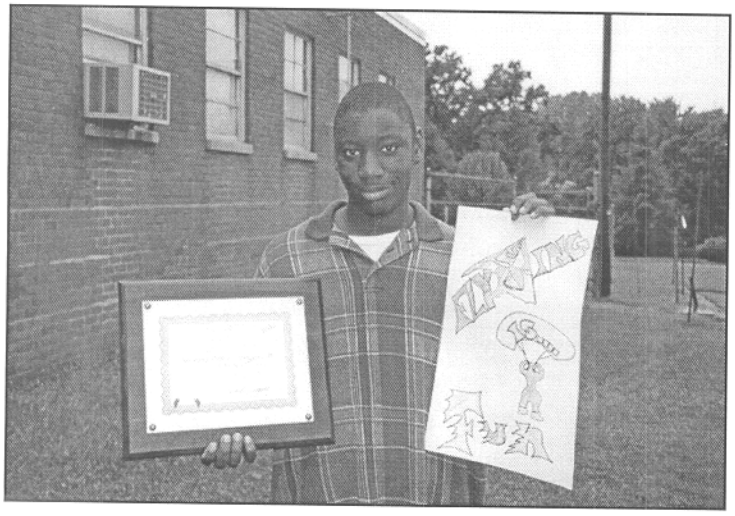
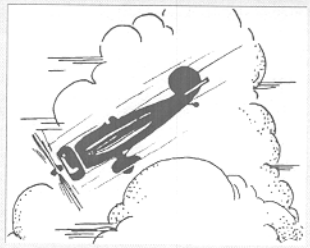


Photo submitted by Jackie Yeatman
Dunbar Middle School

Anthony Williams of Dunbar Middle School in Lynchburg was a second place Virginia winner in the 1999 International Aviation Art Contest.



VIRGINIA AVIATION MUSEUM CALENDAR

November 18, 1999
Guest Speakers Series
Tom Alison
Tom Alison, Chief of Collections for the National Air and Space Museum, and former SR-71 pilot will talk about his experiences flying the Blackbird. Allison flew the Blackbird from 1974 to 1981 at California's Beale Air Force Base and later became Director of Wing Operations until the Blackbirds were retired in 1990.

December 18, 1999
First Flight Celebration
Special hands-on activities and films honoring the first manned, powered, controlled flight made by the Wright Brothers on December 17, 1903. See flying replicas of the Wright Brothers 1900 kite, 1901 and 1902 glider.
10:00 a.m. - noon - included in museum admission.

Guest Speakers Series Programs begin at 7:00 p.m. in the Benn Theater. Please call (804) 236-3622 to confirm date and time. The Virginia Aviation Museum is open daily from 9:30 a.m. to 5:00 p.m. Admission is $5.00 for adults, $4.00 for seniors and $3.00 for youth. It is located at Richmond International Airport, 5701 Huntsman Road, Richmond International Airport, Virginia 23250. For further information on events and schedules, call (804) 236-3622.

Aviation Education Corner

Wind in Your Socks

Objectives

The students will:
Construct and use a simple wind sock.
Measure wind direction and speed using a wind sock.

Standards and Skills

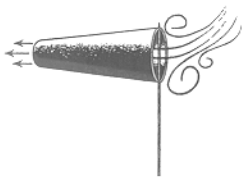
Science
Science as Inquiry
Physical Science
Science and Technology

Mathematics
Problem Solving
Reasoning
Measurement

Science Process Skills
Observing
Measuring

Background

A wind sock is a type of kite used to detect wind direction. It is a tapered tube of cloth that is held open at one end by a stiff ring. Wind is directed down the tube, causing the narrow end to point in the same direction the wind is blowing. Brightly colored wind socks are used at airports help pilots determine the wind direction along the ground. *Meteorologists* use wind direction to help predict the weather.



Materials

1 sheet 8 1/2 x 11 printer or copy paper
1 piece tissue paper 28 cm x 28 cm
White glue or paste
Cellophane tape
Scissors
Single-hole paper puncher
1 paper clip
Metric ruler
1.2 m kite string
Magnetic compass
Wooden dowel

Preparation

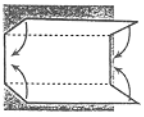
Cut the tissue paper into 28 cm x 28 cm squares before beginning the activity. One square is needed for each wind sock.

Management

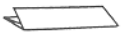
The students will need approximately 1 hour to build a wind sock. It can take several days to monitor wind direction. For younger students, make one wind sock for the class and use it to record data on the student page.

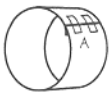
Activity

1. Fold a piece of 8 1/2 x 11 inch paper lengthwise to make the border strip for the wind sock.

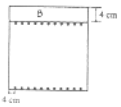


2. Form a loop from the strip and tape the ends of the paper together. Mark the outside edge with the letter A.



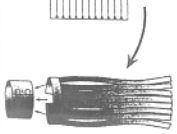


3. On the tissue paper use a marker to draw a line 4 cm from one edge and across the paper. Mark the 4 cm x 28 cm area with the letter B.



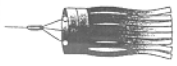
4. Beginning alone one end of the line drawn in part 3 above, measure and mark a point 3 cm from the edge. Continue marking the edge with additional points each separated by a distance of 3 cm.

5. Repeat step 4 to mark points along the opposite end of the tissue paper.



6. Using the points, draw a series of lines on the tissue paper. With scissors, cut along these lines to make strips.

7. Glue edge B of tissue paper to edge A of the loop strip made in step 2. Allow time for the glue to dry.



8. Use a hole punch to punch three holes equal distance around the paper ring.

9. Cut 3 pieces of string 30 cm long. Tie one end of each string to the wind sock at each of the 3 holes.

10. Tie the loose ends of the string to a single paper clip. Add and additional 30 cm length of string to the paper clip.

11. Test the wind sock by holding the single string in front of a fan.

12. Tape the wind sock to a wood dowel and place outside to monitor wind direction and speed. To help determine wind direction use a compass to mark north, south, east, and west below the wind sock (with the dowel in the center).

Discussion

1. What does the wind sock do in the wind? *The wind sock aligns itself with the wind and the strips move toward a horizontal pattern.*

2. What are some ways wind socks can be used? *Pilots preparing for takeoff and landing observe wind socks to determine wind direction and speed because they want to land and takoff facing the wind to reduce the takeoff and landing distance. Meteorologists use wind socks to help forecast the weather. Some factories that must regulate the amount of emissions they may put into the atmosphere use wind socks to monitor wind conditions -- wind speed and direction will have an effect upon the distance and direction emissions will travel.*

Assessment

1. Place a fan on a table, then have students demonstrate wind direction using the wind sock.

2. Use the activities on the student pages to determine and record the strength of the wind: calm, slight breeze, gentle breeze, moderate breeze or strong breeze.

Extensions

1. Use garbage bags or nylon fabric instead of tissue paper to make a wind sock that is more weather resistant.
2. Use different colors of tissue paper to decorate wind socks.
3. Make wind socks of different sizes.
4. Place a wind sock in the classroom in different positions and ask the students to determine if there is air circulation in the room, and from which direction.
5. Ask the students to write down information about the wind on a specific day and time. Repeat this activity for several days.
6. In the classroom, obstruct the airflow (using objects, or students) between the fan and the windsock and observe how the wind sock responds. Discuss how objects in nature may change the flow of wind.
7. Put the wind sock at different distances from the fan throughout the classroom. Ask the students to observe the various ways the wind sock responds.

The above activity is from AERONAUTICS - An Educator's Guide with Activities in Science, Mathematics, and Technology Education produced by NASA for Grades K-4.

Virginia Airport Operators Council Scholarship for 2000

Application forms for the 2000 Virginia Airport Operators Council (VAOC) Scholarship Award Program have recently been mailed to all Virginia public schools. The $2,000 scholarship, which is co-sponsored by the Virginia Department of Aviation, will be awarded to a Virginia high school senior who plans to pursue post secondary education in preparation for an aviation career.

Applications are also available on the Virginia Department of Aviation's web site: *http://www.doav.state.va.us*.

NBAA's Aviation for Kids Program

The National Business Aircraft Association (NBAA) has developed an aviation careers outreach program called Aviation for Kids. An Activities Package and Teacher's Guide (for elementary teachers of grades 2 through 5) are under development and should be available by Spring 2000.

A web site is already online and may be accessed at *http://www.avkids.com*.

2000 National Congress on Aviation and Space Education

The next National Congress on Aviation and Space Education (NCASE), sponsored by the Civil Air Patrol, is scheduled for March 15-18, 2000 in San Diego, California. The Congress will take place at the Town and Country Hotel.

NCASE is a national aerospace education conference open to all educators. It has provided teachers with professional development, personal growth, and unlimited networking opportunities for over 31 years.

Hands-on workshops provide attendees with activities and skills which they can use in their classrooms.

This year's keynote speaker will be Homer H. Hickam, Jr., NASA engineer and best-selling author of OCTOBER SKY.

For more information about NCASE, including downloadable registration forms, visit the CAP's web site: *http://www.cap.af.mil/conference/pages/nc/natcong.html*.

Aviation & Space Web Sites

Civil Air Patrol	**http://www.cap.af.mil**
Federation Aeronautique Internationale	**http://www.fai.org**
Minnesota Aeronautics	**http://www.dot.state.mn.us/aeronautics/mdot.html**
NASA Langley Education	**http://edu.larc.nasa.gov**
NBAA AvKids Program	**http://www.avkids.com**
Science Museum of Virginia	**http://www.smv.org**
Virginia Department of Aviation	**http://www.doav.state.va.us**

SCIENCE MUSEUM OF VIRGINIA CALENDAR

IMAX FILMS:
MYSTERIES OF EGYPT (May 22-December 3)
EVEREST (May 22-December 3)
THE IMAX® NUTCRACKER (Nov. 19-Dec. 31)
AFRICA - THE SERENGETTI (Dec. 4-Dec. 31)
FANTASIA/2000 THE IMAX EXPERIENCE (Opening Jan.1, 2000)

PLANETARIUM SHOW:
NIGHT SKY (Continuous)
STARDATE: ANCIENT HORIZONS (May 22-December 3)
WSKY: Radio Station of the Stars (Dec. 4-Apr 14)

LIVESKY: Informal "live" planetarium presentation of the month's celestial events. Third Friday of every month.
SKYWATCH: Third Friday of every month (weather permitting) on the front lawn.

24-Hour Information: (804) 367-0000
Box Office: (804) 367-1080
24-Hour Skywatch Information: (804) 367-8277
24-Hour TDD Information: (804) 367-9760
General Information - TDD: (804) 367-6552
Group Scheduling: (804) 367-6552
Home Page: http://www.smv.org

VIRGINIA AIR AND SPACE CENTER CALENDAR

VISITING EXHIBITS:
BUG'S EYE VIEW Sept. 25 - Jan. 9, 2000
THE ATOMS FAMILY Jan. 24 - May 7, 2000

IMAX FILMS:
THRILL RIDE: THE SCIENCE OF FUN thru Jan. 13, 2000
AMAZON thru Jan. 13, 2000
Evening Double Feature: AMAZON and SPIRIT OF THE WILD thru Jan. 13, 2000

SIGMA SERIES LECTURES:
"Measuring Cosmic Evolution with the Hubble" Harry Ferguson, Dec. 7, 1999 - 7:30 p.m.

STAR STATION ONE EDUCATION CENTER - VASC has been chosen as Virginia's only Star Station One Center. This national program is designed to build awareness of the International Space Station with the Center's demonstration, "Get it Together."
Saturdays - 11:00 a.m. and 1:00 p.m.
Sundays - Noon and 1:00 p.m.

Call (804) 727-0900 for show times
Visit the Center's Home Page:
http://www.vasc.org

Calendar of Events

February 4, 2000	Postmark deadline for International Aviation Art Contest artwork. For more information visit the Department of Aviation's web site at *http://www.doav.state.va.us.*
February 16, 2000	Postmark deadline for VAOC Scholarship applications. For more information visit the Department of Aviation's web site at *http://www.doav.state.va.us.*
March 15-18, 2000	National Congress on Aviation and Space Education, San Diego, California -- Open to all educators. Sponsored by the Civil Air Patrol. For more information visit the Civil Air Patrol's web site at *http://www.cap.af.mil.*

For more events check out:
http://www.doav.state.va.us/calendar.htm.

Aviation Education Supporters:

VASEF projects are funded by our membership fees and by donations from our member organizations. We would appreciate your support through membership in our organization.

_____ Regular Membership $25.00 annually (July - Dec. $12.50)

_____ Non-Profit Organization $25.00 annually (July - Dec. $12.50)

_____ Corporate Membership $100.00 annually (July - Dec. $50.00)

____ New Member _____ Renewal

Date: _____

Name: _____

Name of Organization: _____

Occupation: _____

Address: _____

City: _____ State_____ Zip _____

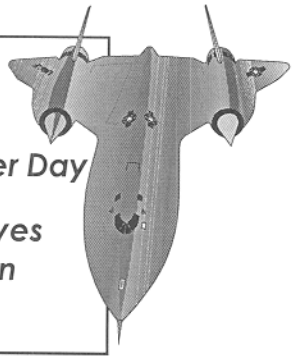
Telephone_____

Please Return to: Tom Tyndall, VASEF Treasurer
5702 Gulfstream Road
Richmond, Virginia 23250-2422

VASEF Aviation Education News
5702 Gulfstream Road
Richmond, Virginia 23250-2422

Bulk Rate
U.S. POSTAGE
PAID
Richmond, Va
Permit No. 949

Inside:



Please Post for Teachers